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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

BUGG, GEORGE A

ART UNIT

PAPER NUMBER

2613

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15

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/660,811

Applicant(s)

KNIGHTON ET AL.

Examiner

George A Bugg

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 May 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 September 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Response to Arguments

1. In response to Applicant's arguments a new rejection is presented and the previous rejection is withdrawn.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-4, 8-15, 18, and 19, are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 5,831,621 to Pito, in view of US Patent No. 5,991,437 to Migdal et al.

1. As for claims 1 and 13 Pito discloses, in column 5, lines 24-48, and in Figure 1, a camera or scanner (Element 10) which scans three dimensional object data. The scanner shown in Figure 1 is equivalent to the claimed digitizer, since they perform the same function. The orientation fixture, as claimed, is also shown in Figure 1, as Element 14. As the turntable rotates, the orientation of the object is changed from a first position to a second position, revealing a first aspect, or view, of the object at a first

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orientation, and revealing a second aspect, or view, of the object at a second orientation, relative to the scanner, or digitizer (Column 5, lines 35-45). Pito further discloses computer control and software, which is utilized to determine the "Next Best View". In other words, the software performs mathematic manipulation on the scanned images of the object, to determine what area of the object to look at next, and thereby automatically repositions the turntable, to obtain the desired object orientation.

Furthermore, as stated in column 5, lines 33-35, ranges, or distances, are measured using triangulation techniques. As is known in the art, triangulation techniques are used to calculate the distance between two points, in this case, the distance between the orientation fixture and the digitizer, when distance information is not known, or predefined. It is the interpretation of the Examiner, that Figure 1, discussed in column 5, shows the digitizer and orientation fixture, as independent units. As for the limitation that the digitizer and the orientation fixture have no predefined relative position, the teachings of Migdal (column 7, lines 38-53) disclose the use of a 3D object to calibrate a scanning system. As discussed, the 3D calibration object is marked with geometric shapes so that the scanner can "find" the object, and accurately determine its distance from the scanner (column 4, lines 40-45). In other words, at distance x from the scanner, how many pixels high and wide should the object be. Once the object is found, the system can be adjusted or calibrated based on known information about the geometric shapes marked on the object. This calibration technique is well known, and does not differ from that of Applicant, wherein Applicant's Specification (page 5, line 19 – page 6, line 14) discloses the use of indicia or physically observable structure for

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identifying and acquiring the orientation fixture. As for the additional limitations of claim 13, Migdal discloses in column 4, lines 34-36, that the development of portable scanning systems is desirable. Coupling units together for the purpose of portability is an obvious embodiment. Therefore, it would have been obvious to one of ordinary skill in the art to combine the teachings of Pito and Migdal for the purpose of creating a highly accurate scanning system.

2. Regarding claim 2, in column 1, lines 23-33, Pito discloses measuring the distance between the range camera, or digitizer, and the surface of an object, which is equivalent to determining the position of the orientation fixture, relative to the digitizer, since the object to be scanned is sitting atop the orientation fixture, or turntable. Furthermore, as stated in column 5, lines 33-35, ranges, or distances, are measured using triangulation techniques. As is known in the art, triangulation techniques are used to calculate the distance between two points, in this case, the distance between the orientation fixture and the digitizer, when distance information is not known, or predefined. It should also be pointed out by the Examiner that the term "relative position" is being interpreted as the distance between the digitizer and the orientation fixture, the claim does not require identification of the object.

3. As for claims 3 and 14, column 5, lines 57-67, Pito discloses a breakdown angle of a scanner, which is determined from the calibration of the scanner, or digitizer. While Pito does not specifically claim automatic calibration, calibration is taught. In *re* Venner, 262 F.2d 91, 95, 120 USPQ 193, 194 (CCPA 1958) (Appellant argued that claims to a permanent mold casting apparatus for molding trunk pistons were allowable

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over the prior art because the claimed invention combined "old permanent-mold structures together with a timer and solenoid which automatically actuates the known pressure valve system to release the inner core after a predetermined time has elapsed." The court held that broadly providing an automatic or mechanical means to replace a manual activity which accomplished the same result is not sufficient to distinguish over the prior art.) Therefore, it would have been obvious to add an auto calibration to allow for quick set up and measurement of more diverse objects.

4. With regard to claims 4 and 15, column 10, lines 1-9, teach the use of a computer and software, or host, for modeling a three dimensional representation of an object.

5. As for claims 8, 9, and 18, Migdal discloses in column 4, lines 34-36, that the development of portable scanning systems is desirable. Self-contained power sources make systems portable, which is not patentably significant. In re Lindberg, 194 F.2d 732, 93 USPQ 23 (CCPA 1952) (Fact that a claimed device is portable or movable is not sufficient by itself to patentably distinguish over an otherwise old device unless there are new or unexpected results.) Therefore it would have been obvious to one of ordinary skill in the art to make portable and allow for measurement of remote locations.

6. With regard to claims 10 and 11, Migdal shows the use of geometric shapes (column 7, lines 38-53) for orientation fixture identification.

7. As for claims 12 and 19, in column 5, lines 23-32, Pito discloses the orientation fixture, Element 14 of Figure 1, as a turntable.

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8. Claims 5-7, 16-17, and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 5,831,621 to Pito, in view of US Patent No 5,991,437 to Migdal et al, an further in view of International Publication No. WO 96/02106 to Vellacott.

9. As for claims 5-7, 16-17, and 30, Pito discloses, in column 5, lines 24-48, and in Figure 1, a camera or scanner (Element 10) which scans three dimensional object data. The scanner shown in Figure 1 is equivalent to the claimed digitizer, since they perform the same function. The orientation fixture, as claimed, is also shown in Figure 1, as Element 14. As the turntable rotates, the orientation of the object is changed from a first position to a second position, revealing a first aspect, or view, of the object at a first orientation, and revealing a second aspect, or view, of the object at a second orientation, relative to the scanner, or digitizer. Pito further discloses computer control and software, which is utilized to determine the "Next Best View". In other words, the software performs mathematic manipulation on the scanned images of the object, to determine what area of the object to look at next, and thereby automatically repositions the turntable, to obtain the desired object orientation. **Furthermore, as stated in column 5, lines 33-35, ranges, or distances, are measured using triangulation techniques. As is known in the art, triangulation techniques are used to calculate the distance between to points, in this case, the distance between the orientation fixture and the digitizer, when distance information is not known, or predefined. It is the interpretation of the Examiner, that Figure 1, discussed in column 5, shows the digitizer and orientation fixture, as independent units. Column 10, lines**

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1-9, teach the use of a computer and software, or host, for modeling a three dimensional representation of an object, while Pito fails to teach communicating over a wireless link, as well as transmitting data remotely, page 1 of the Vellacott reference discloses the use of LAN systems, wireless communications, as well as remote transmission, and that host PC's are well known in the art. It would have been obvious to one of ordinary skill in the art to combine the teachings of Vellacott and Pito, for the purpose of creating a more robust three-dimensional scanning system.

10. Claims 27-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 5,831,621 to Pito et al., in view of US Patent No. 5,991,437 to Migdal et al., and further in view of US Patent No. 6,421,079 B1 to Truc et al.

11. As for claims 27-29 Pito discloses, in column 5, lines 24-48, and in Figure 1, a camera or scanner (Element 10) which scans three dimensional object data. The scanner shown in Figure 1 is equivalent to the claimed digitizer, since they perform the same function. The orientation fixture, as claimed, is also shown in Figure 1, as Element 14. As the turntable rotates, the orientation of the object is changed from a first position to a second position, revealing a first aspect, or view, of the object at a first orientation, and revealing a second aspect, or view, of the object at a second orientation, relative to the scanner, or digitizer. Pito further discloses computer control and software, which is utilized to determine the "Next Best View". In other words, the software performs mathematic manipulation on the scanned images of the object, to determine what area of the object to look at next, and thereby automatically repositions the turntable, to obtain the desired object orientation. As for rescanning points of

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interest at higher resolution, while the Pito reference does not specifically disclose what is claimed, the Truc reference teaches (column 1, lines 33-41) that rescanning selected images at higher resolution is desirable. Furthermore, column 15, lines 51-67, disclose just that, a scanner which rescans selected images (points of interest) at a higher resolution. Therefore, it would have been obvious to one of ordinary skill in the art to combine the teachings of Pito and Truc for the purpose of creating a scanning system which is capable of producing quality high resolution images.

12. Claims 20-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 5,799,082 to Murphy et al.

13. As for claims 20 and 23, in column 15, lines 6-31, Murphy discloses freezing or locking image data, and further preventing transmission to another person or facility (i.e. remotely), except those who are authorized, and implement the proper request for downloading the information. Furthermore, the fact that information can be transmitted back and forth, is itself a teaching of a distributive network. While the Murphy reference may not specifically disclose unlocking and image-capturing system, it is the contention of the Examiner that the frame lock mechanism, which prevents image data from being downloaded, serves the same purpose. (Official Notice) Therefore, it would have been obvious to one of ordinary skill in the art to employ the locking mechanism of Murphy, for the purpose of maintaining an uncompromised network.

14. With regard to claims 21 and 22, column 13, lines 53-67, disclose a camera system, which determines position information (i.e. location coordinates, angular orientation coordinates, and distance to the object) or three dimensional image data.

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Claim 16 of Murphy discloses an image-capturing device, which can be reprogrammed remotely.

15. As for claims 24-26, Murphy discloses, in column 13 lines 30-52, and column 15, lines 19-47, encrypting algorithms, and decryption using position parameters of the object, as well as storage limitations and uploading encrypted image data.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to George A Bugg whose telephone number is (703) 305-2329. The examiner can normally be reached on Monday-Thursday 9:00-6:30, and every other Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christopher S Kelley can be reached on (703) 305-4856. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

George A Bugg
Examiner
Art Unit 2613

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June 7, 2004



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